Portable Seat Lift Benefits the Disabled

Bob Lessels/LA02
205–544–6539
E-mail: bob.lessels@msfc.nasa.gov

Persons who cannot sit down or stand up easily are getting a boost—literally—from the American space program.

A portable lifting seat developed and patented by the Marshall Center, is now being manufactured by TQM, Inc., in Merrimack, NH. For individuals with degenerative knee or hip joint diseases or injuries, the easily carried device offers them a new degree of freedom. With it, they will be able to attend movies, go out to dinner, and do other things which involve sitting and standing without the need for a companion to help them sit or rise.

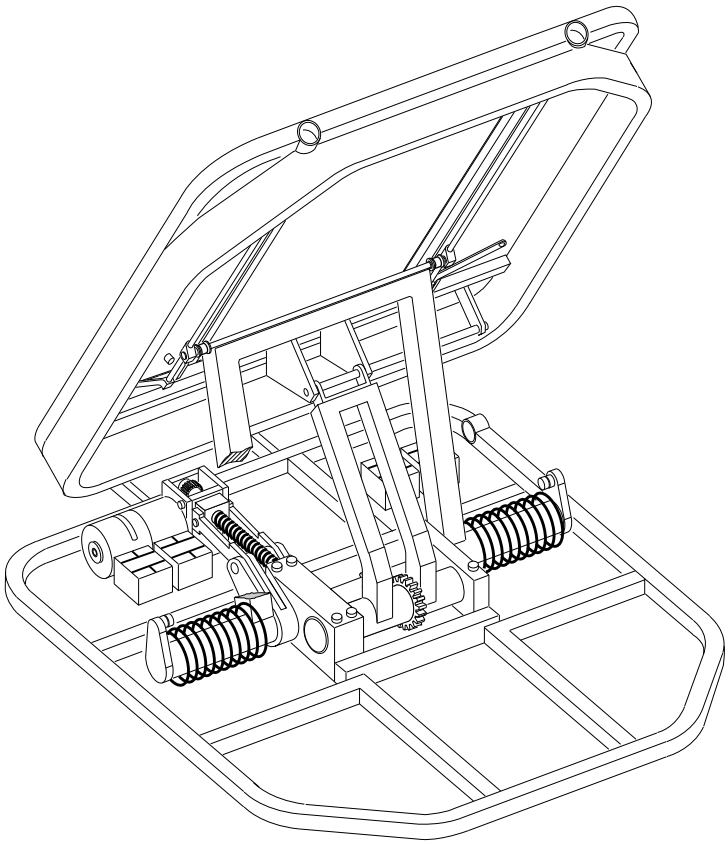

Figure 199.—The battery-powered portable lifting seat can help people who need assistance sitting and standing to lead more independant lives.

Development of the portable lifting seat was begun in 1990 by Bruce Weddendorf, Pete Rodriguez and Richard Smith, all from the structural development branch of Marshall's Structures and Dynamics Laboratory. Dr. David W. Gaw, an orthopedic surgeon at the Southern Hills Medical Center in Nashville, Tenn., provided professional medical guidance to the team. While the MSFC team members are more commonly involved in helping lift space shuttles to orbit, their expertise found a welcome application in developing the portable lifting seat.

Using funds provided by the Marshall Technology Utilization Office, the three developed what they call "an upholstered aluminum box"—a lightweight, battery-powered lifting device capable of assisting individuals weighing up to 300 lb with severe degenerative conditions in their knees, hips and/or backs with sitting down or standing up. It was estimated when work began in 1991 that up to eight million individuals could benefit from the device, if it could be developed. Most afflicted individuals have devices such as powered chairs in their houses, but require assistance when away from home. If no one is available to assist the individual, they often cannot leave home. With the portable seat lift, these persons may soon be able to carry the help they need as easily as a person carries a briefcase.

The device consists of a battery-powered motor which drives a gear train and crank assembly. The gears and crank lift up and push forward simultaneously, ensuring the padded seat remains at a proper angle to maintain contact with the individual being assisted. The individual being lifted controls the device via a three-position switch to raise, lower or stop the seat. A carrying handle completes the device.

By placing the powered lifting seat on a chair in a restaurant or on a theater seat, the individual needing assistance can sit down or stand up with ease, thereby experiencing a fuller, more normal lifestyle.

Nurses and orderlies in hospitals and nursing homes also may find the device useful in protecting themselves from back strain incurred lifting patients or residents and in assisting them to sit down. The powered seat would carry the weight of the patient with the nurse or orderly safely guiding and steadying the patient.

Sponsor: Office of Commercial Development and Technology Transfer

Biographical Sketch: Bob Lessels is the technical writer/editor (physical sciences) for the Technology Transfer Office at the Marshall Space Flight Center. A graduate of the University of Nebraska, he has been a professional journalist for the past 30 years. He joined NASA in 1986. ■